



COMMONWEALTH OF AUSTRALIA

Official Committee Hansard

**HOUSE OF
REPRESENTATIVES**

STANDING COMMITTEE ON PRIMARY INDUSTRIES AND
REGIONAL SERVICES

**Reference: Development of high technology industries in regional Australia based
on bioprospecting**

MONDAY, 4 JUNE 2001

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**HOUSE OF REPRESENTATIVES
STANDING COMMITTEE ON PRIMARY INDUSTRIES AND REGIONAL SERVICES**

Monday, 4 June 2001

Members: Fran Bailey (*Chair*), Mr Adams, Mr Andren, Mr Horne, Mr Katter, Mr Lawler, Mr Leo McLeay, Mr Nairn, Mr Schultz, Mr Secker, Mr Sidebottom and Mr Cameron Thompson

Supplementary members: Mr Griffin and Dr Washer

Members in attendance: Mr Adams, Fran Bailey, Mr Lawler, Mr Nairn, Mr Secker, Mr Cameron Thompson and Dr Washer

Terms of reference for the inquiry:

To inquire into and report on the following areas, with particular emphasis on the opportunities in rural and regional Australia:

- the contribution towards the development of high technology knowledge industries based on bioprospecting, bioprocessing and related biotechnologies;
- impediments to growth of these new industries;
- the capacity to maximise benefit through intellectual property rights and other mechanisms to support development of these industries in Australia; and
- the impacts on and benefits to the environment.

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Committee met at 11.06 a.m.**BURTON, Mr Geoffrey Charles, Director, Access Taskforce, Department of Environment and Heritage****KITCHELL, Mr Maxwell Roy, First Assistant Secretary, Natural Heritage Division, Department of Environment and Heritage**

CHAIR—I declare open the public hearing of the inquiry by the House of Representatives Standing Committee on Primary Industries and Regional Services into the development of high technology industries in regional Australia based on bioprospecting, bioprocessing and related technologies. This hearing is the third of the inquiry. We have already heard from Biotechnology Australia; Agriculture, Fisheries and Forestry Australia; and CSIRO. Today Environment Australia is appearing before us.

Although the committee does not require that you give evidence under oath, I should advise you that the hearings are legal proceedings of the parliament and warrant the same respect as proceedings of the House itself. The giving of false or misleading evidence is a serious matter and may be regarded as a contempt of parliament.

We have a very detailed submission from Environment Australia. Would you like to start this morning by making a brief statement to that or are there any other matters that you want to raise with us at the start of our hearing this morning?

Mr Kitchell—I would like to make some introductory comments. Without reading the submission itself, we would like to draw some of the pertinent points from that before opening ourselves up to questions from you.

As the committee would know and as is included in our submission, EA's views have been very heavily influenced by the outcomes and findings of the public inquiry that our minister, Senator Hill, instituted into access to biological resources in Commonwealth areas—the report that came to be known as the Voumard report. Geoff Burton was the executive officer for that report.

The first thing that I need to say is that Environment Australia are not an industry development agency—nor do we pretend to have any particular expertise in that field. Our role is that of a regulator and protector of the natural resources. Hence, we have no submission to make on the first of your four terms of reference. We can, however, assist industry by establishing a simple and coherent regulatory framework within which industry can make decisions with certainty and clarity. It is in that context that we want to make comment on the second, third and fourth terms of reference of your inquiry.

If I can go to the first of those terms of reference, the issue of impediments, one impediment to bioprospecting and the consequent development of bioprocessing and related industries is the lack of a coherent legal framework for access to those resources. This lack of a coherent framework applies not just within the Commonwealth but across the state and the territory jurisdictions as well. Generally speaking, the laws under which the activity is controlled were designed for other purposes. They were designed for things such as nature conservation, for land use and for natural resource management. The upshot of that is that there is often a

complex web of legislation and associated administrative procedures for bioprospectors to follow. At least for some smaller companies this can be a significant impediment. Certainly it is our view that if we attempt to tie industry up in a confusing and unnecessary amount of red tape then opportunities may well be lost to Australia.

So at the Commonwealth level certainly this lack of a coherent legislative framework has been acknowledged. Indeed, it was addressed in the Commonwealth's National Biotechnology Strategy which was released last year. That strategy identified six steps to achieve what they called 'clear and transparent terms of access and condition for use of Australia's marine and terrestrial biological resources'. Environment Australia is involved with some work in each of those six steps, but if I can particularly draw on three of those six steps out of the biotechnology strategy. The first of those was to develop appropriate documentation, management and access protocols. We are, as recommended by the Voumard inquiry, developing a model contract, which would assist parties to reduce transaction costs in developing benefit sharing agreements. Some states have already expressed interest in participating in this process of developing a model contract with a view to the possible adoption of that contract outside of Commonwealth areas—in other words, within their own jurisdictions.

The second of the steps within the biotechnology strategy was to address matters involving indigenous people and their ownership of biological resources. The Commonwealth clearly has a major role to play here, given that the bulk of privately owned land in Commonwealth areas is owned by indigenous people—that is Uluru, Kakadu and Booderee, all of them being jointly managed as Commonwealth national parks. So we have a special relationship with the owners of those lands. Accordingly, the regulatory framework that we are developing will ensure that their property rights are properly protected and their knowledge respected and valued.

The third of the six areas under the biotechnology strategy which we are involved in was the area which indicated that we should address, and the Commonwealth should address, issues of access to biological resources within Commonwealth areas, including through regulations under the Environment Protection and Biodiversity Conservation Act. Indeed, it is just those regulations which our minister, in consultation with his Commonwealth Biotechnology Ministerial Council colleagues, is currently developing. We would be hopeful that a draft set of regulations will be soon put out to the public for comment. We cannot say exactly what the regulations are here because they have yet to be released. Certainly we can indicate that the objectives of these regulations are threefold. Firstly, they are to facilitate access to and benefit sharing from biological resources in Commonwealth areas. Secondly, they are to harmonise existing Commonwealth access arrangements. Thirdly, they are to develop an access and benefit sharing scheme which could serve as a basis for the states and the territories, thereby promoting the establishment of a nationally consistent approach.

Another area where Environment Australia is assisting in overcoming some of the impediments to access to genetic resources is through the development of the Australian Virtual Herbarium. One of the impediments is the difficulty the researchers sometimes have in knowing the extent of Australia's biodiversity and just where species might be located. So Environment Australia, with assistance from Biotechnology Australia and in consultation with all of the state and territory herbaria are currently supporting the development of the Australian Virtual Herbarium, which is essentially a national collaborative database which computerises all of Australia's botanical collections from all of the institutions which maintain those collections

from around the nation and makes that Internet accessible. In other words, anybody anywhere in Australia will have immediate access to those enormously valuable collections built up since the time that Banks first came to this country.

If I can then move to the third of your terms of reference, the issue about benefit sharing. In Australia the importance of ensuring returns from utilisation of our genetic resources was recognised as early as 1993 by the Australia and New Zealand Environment and Conservation Council. Since then there has been widespread recognition of its importance, and this is spelt out in some detail in our submission.

The essential point that I would like to make on this matter is that achieving returns need not be a difficult or overly complicated matter. The essential elements of any underlying framework are threefold: firstly, the minimisation of transaction costs, and we would do that through low fees and the encouragement of the use of model contracts; secondly, the maximisation of certainty through a clear statement of the requirements, including the authority for benefit sharing and by building on existing property and intellectual property law; and, thirdly, by ensuring flexibility through the resource owner and the accessor in negotiating agreements for their mutual benefit and reflecting market forces.

Benefit sharing agreements themselves are not new and our submission outlines several existing examples. The key point to be made in relation to such agreements is that they reflect the principle that the owner or the manager of a biological resource is able to negotiate the conditions under which he or she may allow access to that resource. This process respects existing property law and does not establish new property rights. Similarly, benefit sharing arrangements do not create or alter intellectual property rights.

EA thinks that it is important not to raise expectations too high about the value of returns from bioprospecting. The chances of a major new product being brought to the market from a natural biological resource are quite long. They are somewhere between one in 10,000 and one in 100,000. It may be that the more immediately available benefits are those which accrue to nature conservation—that is through the discovery of new species, the sharing of new scientific knowledge, the increased local employment through the collection of samples and technological transfer.

There is the possibility of a share of the returns from any products, principally a pharmaceutical product that might be developed from natural sources. It could be that they would be quite lucrative. If the cure for the common cold was found out there in a native plant somewhere the royalties from that could be absolutely enormous, even if it was a relatively small component of the total price of the product.

Mr ADAMS—You would get benefits from the royalty.

Mr Kitchell—Yes. Now to the fourth of your terms of reference: the environmental impacts and the environmental benefits of bioprospecting. A key to any legal framework regulating access to genetic resources is the need to ensure that the collection and the collection process do no harm to the sustainability of the species and to biological communities from which the material is taken. It is the task of the regulator—in Commonwealth areas that is us—to ensure that approval is only given when this is the case. In our view, bioprospecting in general will

require very small amounts of material taken and would be considered almost in every case a very low impact activity. So we would expect that most applications would be determined on the basis of the information provided in the original application and no further information would be necessary. In certain cases some more rigorous assessment might be required, but we could only see that where we are talking about critically endangered species where any access to them has to be dealt with very carefully.

Mr SECKER—Would you include Kakadu or the Great Barrier Reef as well into more rigorous assessments?

Mr Kitchell—If you are talking about the collection of a few hundred grams or a few kilograms of material from commonly available species we think that that will require very little detailed assessment. A complication might depend on the technique that is being used for collection. If they were in the Barrier Reef and they were proposing to dredge along on top of the coral for a few hundred grams that might be a bit of a problem. I do not think you should overstate the possibility of damage from collection for bioprospecting purposes. The potential for damage is very small. We would not want to gum up the works with industry by insisting too heavily on regulation. We do not want to put ourselves or anybody else out there trying to assess this to unnecessary expense either.

The impact will be relatively slight and manageable. In terms of the benefits that might come from bioprospecting we think again that most of the benefits are probably going to be not so much financial, unless we do find the cure for cancer out there somewhere. Most of the benefits we believe will accrue to nature conservation by providing us with a better understanding of our natural biota. That is exactly what has happened in the Queensland example where they have found new species that they did not know of before and they have greatly increased their knowledge of Queensland's natural biodiversity.

To conclude, from EA's perspective what we are doing is working to establish a certain and secure legal and policy environment in which science and industry can discover and realise the potential value of our genetic resources. In doing so we are building on Australia's five key advantages: we are a megadiverse country with 10 to 13 per cent of the world's entire biodiversity; secondly, we have a stable political system; thirdly, we have public administrative systems, which are uncorrupted; fourthly, we have a well-developed legal system; and, fifthly, we have local biotechnology industries, which are reasonably well-established industries and include bodies such as the Australian Institute of Marine Science and with CSIRO.

CHAIR—I would like to start by getting to the critical areas of access and benefits and then my colleagues will join in. In developing the model contract you are obviously looking at both of these key areas. Firstly, who are you consulting with in the drafting process? Are you including the scientific community? Are you including any consultation with industry as well as the state authorities?

Mr Kitchell—The answer to that is yes, we are consulting widely with stakeholders, including those that you mentioned, and amongst those indigenous people as well, who, as I indicated before, within Commonwealth land are large owners of that land. Geoff might be able to elaborate seeing that he is the person who has been doing the consultation.

Mr Burton—What we have in mind as soon as the shape of the regulations is settled is to establish, if you like, a working group with representatives from the scientific community, from industry, from state government, from within the Commonwealth and from environment groups to work together to develop a model contract that addresses all the sectoral concerns. When it is hopefully adopted by the minister and tabled, it can be seen to be something that all the parties understand and see value in. It may be a very effective tool at reducing a lot of the transaction costs involved. At the moment when contracts are being negotiated everybody is reinventing the wheel. This is a recipe for a ‘nice earner’ for lawyers but not for the owners of the resource or for small companies.

CHAIR—You mentioned in your submission, and others have mentioned to us when we have been out meeting with different interest groups, that you are looking for a nationally consistent approach. Do you feel that you are getting that in your consultation process so far or do you think that there is some resistance from the states or from the other groups not to come in under a national approach?

Mr Burton—In the discussions that the Voumard inquiry had with the individual state governments and in other discussions subsequently that I have had at officials level within state governments, there is strong support for establishing a nationally consistent approach. That support is strongest amongst those states which are most actively addressing the issue, and they are primarily Queensland, Western Australia and more recently South Australia. Some of the other states are not as actively engaged, but, even then, states which have not got a real focus on this issue have, in submissions to the Voumard inquiry, emphasised the importance of a nationally consistent approach. I am thinking, for example, of the Tasmanian submission.

CHAIR—I will just ask one more question and then I will throw it open to some of my colleagues. On the whole question of access, in your submission and again in your opening remarks you have mentioned some of the key issues which have to be addressed in the model contract. In your consultation, especially with the scientific groups, have you considered making a contract conditional upon a full taxonomy in those initial stages?

Mr Burton—When you say ‘a full taxonomy’—

CHAIR—The full scientific analysis in those initial stages. It has been put to us that, if government is looking at regulating and funding this area, there is certainly insufficient funding in the initial full scientific analysis, to develop the full taxonomy of let us say a particular species. I am asking a very loaded question I admit, but have you considered or has it been raised in your consultation that a condition in the contract in granting access would be to link it to doing the full detailed scientific analysis?

Mr Burton—Madam Chair in some instances for the sort of work that is being proposed that could well be very onerous on the company that is doing the work. By the same token, a very positive feature of a number of the contracts that have been let is a requirement that, where new species are identified or samples are obtained, there is little or no additional cost in securing an additional sample for lodgment with an appropriate state herbarium or state museum to add to the taxonomic base of data, that takes place. It is through that process that we can really address the public good in mapping out the nature of our biodiversity—what we have, where it is found, what its conditions are.

I think that, particularly where biodiscovery work is in part looking for new species, it may well be onerous for small companies to have to try and undertake a full taxonomic analysis of those species that they have identified.

Mr Kitchell—I think to answer your question directly: have we considered it?—the answer is no; would we consider it?—I think the answer would also be no as a general rule, for the very reasons that you gave, that is, if you were to require a full taxonomic assessment of new species—and there have been hundreds of new species found through the bioprospecting process—then when you are entering into some contract you would pay for that in some other way. In other words, if the companies had to do a full taxonomic assessment they would be trading off those benefits in some other part of the contract. I do not think that would be something that we would want to pursue as a matter of course.

Mr ADAMS—I wanted to address the national park issue that Patrick Secker took up with you. Have we allowed gathering in national parks before? Allowing things to be taken out of national parks is a bit of a new beginning, isn't it. Have we had a past history of that?

Mr Kitchell—When you say 'we' Mr Adams, I am not sure what the position is in the Commonwealth.

Mr ADAMS—By 'we' I mean national parks, the government, the managers of the parks.

CHAIR—Not the New Zealanders.

Mr Kitchell—I know that for bioprospecting purposes in the parks system both Tasmania and Victoria collect—

Mr ADAMS—That is the state governments, but I mean the Commonwealth. Have they allowed things to be taken from the Great Barrier Reef or Kakadu?

Mr Burton—There has been, and there is, scientific study going on in Commonwealth national parks. On the terrestrial parks I am unaware of any bioprospecting work that is being done. Within the Great Barrier Reef Marine Park there is some work being done in relation to those parts of the park with Queensland waters—

Mr ADAMS—Twelve kilometres?

Mr Burton—you would have been aware of the work from your visit to Townsville. There is also scientific research being undertaken elsewhere in the Great Barrier Reef Marine Park. I am unaware at this stage whether that could be considered to be bioprospecting in its commercial sense.

Mr ADAMS—So there are people that have got access in some way through state government applications—Victoria, Tasmania, Queensland—into the national parks to do prospecting?

Mr Burton—National parks are a very attractive place to prospect because they are areas with the least disturbance and usually the highest biodiversity values.

Mr ADAMS—But what is the arrangement for Commonwealth national parks? Do we have a licensing system to allow people to do this or haven't we developed that yet? There is evidently something done—the states have developed something or somebody has got access. I am just wondering about what we have done at national level?

Mr Burton—I am not an expert on national parks but it is my understanding that each of the parks has a management plan and each of the management plans addresses the subject of research activities in those national parks.

Mr ADAMS—So do you think it is at an experimental stage? There is no commercialisation or anything that is coming out of national parks at this stage?

Mr Burton—I am not aware of any commercialisation of material coming out of national parks.

Mr SECKER—But ultimately it will, surely?

Mr Burton—Hopefully. If the owners of those national parks want it to take place, at the end of the day the three Commonwealth national parks are not Commonwealth land in the sense of Commonwealth property but are privately owned land leased to the Commonwealth and the decision about any benefit sharing or accessing of that material rests with the owners of those national parks quite properly.

CHAIR—Can I just clarify: with the model contract, the contract will be with the owner of the resource?

Mr Burton—Yes. The owner or the manager of the resource.

CHAIR—Owner or manager?

Mr Burton—Yes. Manager in the sense that, for example, if it was a marine protected area, under the nature of the law that applies to things floating in the water column you may not necessarily own those things but you do have legal capacity to control the taking of things from that water column and therefore you have the capacity to negotiate conditions on which people may take that material. There is a fine distinction, if you like, between owner and manager in the sense of a public authority managing a biological resource.

Mr SECKER—Often the state governments with those marine parks.

Mr Kitchell—Out to 12.

Mr SECKER—Yes, in state waters.

Mr ADAMS—Twelve ks.

Mr NAIRN—I am just trying to get my head around how a lot of this can really work in practice. I know from the Commonwealth point of view we are just probably concentrating more on things like Kakadu and Uluru, those areas of land which are under the Commonwealth in some way but in association with traditional owners. But if we look at it a little bit broader than that, and clearly you are having to work with the states, how do you see it actually works in practice at the end of the day? If somebody decides that they want to go out and prospect for a particular species in a particular area, do you see it will ultimately work a bit like the mining industry where people have a registered interest in a particular area to prospect for a particular metal and therefore in this area it would be the same so that once somebody has identified a particular part of Australia where they believe there is a unique opportunity within a particular species to do some prospecting they would through their contract have exclusive rights over that? Somebody else coming along being able to find out what is going on in those areas and whether they can go there or not and people simply going on public lands and collecting beetles that they have an interest in: do these sorts of things exercise people's minds—how in practice this can ultimately work?

Mr Kitchell—In a way we do not need to speculate on it, because there have been contracts written already which do allow for exclusivity of access in certain areas for this purpose. Under those circumstances individual pharmaceutical companies have the right through their agents to collect biological material for the purpose of grinding them up and seeing whether there is a pharmaceutically active compound there which might ultimately form a commercial product. Those agreements already exist with state governments around Australia. If on the other hand in your last remarks you are referring to stopping other people doing it, especially the quantities that are required for these biochemical assays which are very small, the answer is you cannot—in the same way as you cannot stop people going and pinching firewood or shooting ducks out of season. You very rarely are able to catch people who are doing the wrong thing on publicly owned land.

Mr NAIRN—They just fall into that sort of category. In relation to royalties and those sorts of things, have you come across a circumstance where any of the state organisations or people who have some sort of ownership ultimately at the end of the day think this is an opportunity to make some money rather than look that little bit further as to the potential benefits if industry can get on to something? Is there any of that sort of mentality within any of the state authorities or departments?

Mr Kitchell—Not that we have noticed. If I can speak as a former public official in three states and as someone in Victoria who actually negotiated one of these agreements with a pharmaceutical company, we had an eye to three things: firstly, how it would actually benefit us as a nature conservation agency in improving our knowledge of our natural biodiversity. In other words, if we had people out there looking for plants and providing those voucher specimens back to our herbarium that would improve our state of knowledge about biodiversity and it certainly has done that. Secondly, if the cure for the common cold or cancer was found out there in a Victorian plant and we had not organised in the contract for a part of the return to come back to the state then we would be kicking ourselves forever. Thirdly we were looking to the development of a locally based industry. AMRAD was a Victorian based company which the government at the time, as part of their push to enhance biotechnology industries in the state, were keen to see given an advantage. That is what we did through the exclusive contract that we signed with them.

Mr ADAMS—Anticompetition policy.

Mr Kitchell—Nobody has told us that it was contrary to the competition policy.

Mr LAWLER—I am still a bit unsure of how this exclusivity works. I presume you are not talking about exclusivity as far as a geographical area is concerned. If someone applies to go in and research something, they must be extraordinarily specific about what they are looking for. Medical history is littered with examples of where they were looking for something and found something else. How does that work? How closely do they have to identify on this proposed contract what they are looking for, and what rights do they then have if they find something that was not identified? Or it could be two completely different industries, finding something from the same organism—paint colour versus penicillin or an antibiotic or something? How do you identify that in the application?

Mr Kitchell—Just again to go from my specific example in Victoria—and Geoff might be able to comment more generally across the jurisdictions—we signed an exclusive contract for access to any plant, any vascular or non-vascular plant on publicly owned land, anywhere in Victoria for the purposes of pharmaceutical screening.

Mr LAWLER—So no-one else was able to—

Mr Kitchell—No-one else was able to collect plants for that purpose anywhere on public land in the state.

Mr LAWLER—That is exclusive.

Mr Kitchell—I suppose that is in an all embracing way, but in a way other folk have exclusive access to the resources of public land. Some sawmillers will have access to certain areas over and above others.

Mr LAWLER—But do they identify specifically what they are going in to get? Exclusivity to the whole area of public land that really restricts

CHAIR—Some are under licence, aren't they?

Mr Kitchell—They are all under licence; that is right. In a way this was under licence—only the licence was expressed as a contract. But you are right in saying that, if your comment is that that is very exclusive over a large area for a lot of things, the answer to that is yes, and the commercial contract reflected that. In other words, if it were a non-exclusive access that they had, then the benefits that they would have provided to the state of Victoria would have been less than had it been an exclusive contract. But, Geoff, I do not know what the position is elsewhere.

Mr ADAMS—I am very interested in how you could overcome the thought process of when you give something like that you are tying up a lot of resources that may not be also gathered. It is pretty limited for someone to do the lot. It is going to be an enormous task, and they are only going to do it at their own pace. You are excluding other people or other opportunities, aren't we? How did you deal with that in the contract?

Mr Kitchell—We dealt with it in the contract by insisting that there was performance over a period of years. They could not just sit on the contract with a view to excluding somebody else. I cannot remember the details, and it probably would not be proper of me in terms of commercial-in-confidence to reveal them, even if I could remember them. But there were performance criteria that they had to meet year on year, and the contract was time limited as well. It did not go on forever.

Mr ADAMS—For 20 years?

Mr Kitchell—I cannot remember.

Mr Burton—Another approach that has been taken in other jurisdictions is an agreement is entered into by a prospector who goes and prospects for whichever range of agreed species and has exclusive access to the samples they collect, but that does not prevent the state government signing another contract with another bioprospector who may be interested in exactly the same set of species perhaps with different end use in mind. And that creates, if you like, an incentive to develop anything they find fairly quickly—it is a sort of race to the market approach. The corresponding down side of that is if you may not be able to, in some instances, gain the same level of benefit because there is not exclusivity on the table. The plus side is that you are more likely to see products discovered or if bioleads are discovered have them actively pursued out of the normal commercial competition to realise what they have actually found.

CHAIR—Does that contract enable them to trade the biota that they have collected?

Mr Burton—I am speaking about contracts that I have not had direct access to, I have only been told about by other state officials.

CHAIR—But your model contract that you are developing?

Mr Burton—Would have terms which I would expect—and this is talking in anticipation—that would allow the bioprospector exclusive access to the samples that they collect under that particular contract perhaps for a particular period of time. In some contracts, depending on the interests of the two parties, the public authority retains ownership of the samples and issues a licence to the access or which determines what the accessor can do with it. In other cases, title of the samples goes to the accessor. It is something that needs to be determined by the self-interest of both parties so that they get the best agreed deal, if you like, out of the exercise. That comes back to intellectual property as well. One way of a small company securing or protecting intellectual property it develops may be that they would prefer to share ownership with the public authority on the basis that any infringement of that intellectual property is more ably pursued and protected by the public authority than a small start-up by a technology company. A larger company may have the completely opposite view.

CHAIR—Can I just give you a hypothetical example? A medium-sized company enters into a contract with an authority who for the legal terms of the contract is the owner of the property, the biota. The medium-sized company has the right to go and collect. It has the right to do the full scientific analysis. Under the model contract, does it also have the right to export not just the knowledge but the sample that it has collected?

Mr Burton—The export of the material is determined by a set of laws governed by separate legislation—that is the Wildlife Protection (Regulation of Exports and Imports) Act. Essentially, if the material is not on the endangered species list, not CITES listed, and has been demonstrably obtained lawfully, then there would not be a legal prohibition against the export of that material. At the same time, it is possible in the terms of the contract—and this has been reflected in some existing contracts—where the accessor may undertake to do the work in the country, and how much work in that country may be a function of their willingness to invest in Australia to invest in establishing a new industry, if it is, say, a large multinational. Or if it is a very small company, to take its development as far as it can onshore and then seek to maximise its commercial benefit from intellectual property, and it is derived by licensing material or undertaking further scientific work offshore. That might involve synthesising bioactive leads or manipulating bioactive leads, or undertaking clinical trials, for example.

CHAIR—Okay, I will come back to that.

Mr SECKER—But what if it is a newly discovered species, how would you know if it is endangered or not?

Mr Burton—That is a really interesting question. You may not. It may be difficult by the nature of where it was located, the nature of the species that has been discovered, to know whether, in fact, it is widely spread, rare, endangered or vulnerable. It may be possible to infer how widespread it is by knowing how widespread related species are of that particular type and how broad the particular ecosystem is. If you are looking at very small ecosystems, for example, undersea fumeroles, where new species are literally contained within say a 30-metre radius, you may want to, taking a precautionary approach, take control of recollection and collection very seriously to ensure that you do not accidentally wipe out the few only living examples of this species.

Mr Kitchell—Whether the species is rare, endangered, common or unknown in the case of a previously unknown species, the export of that out of Australia is subject to the wildlife protection act that Geoff talked about and subject, therefore, to the Commonwealth environment minister's authorisation.

Mr SECKER—I always get a bit worried when I hear the words 'the precautionary approach', which usually means negative things in other areas. At the Townsville inquiry we saw the possibility of exporting sponges and some coral—there may be some opportunities there. But micro-organisms are a little bit different. I am probably not that worried about the exporting, but do we have quarantine regulations or implications about importing of these micro-organisms?

Mr Burton—We do. Unfortunately, I do not know the name of the legislation, but there is an international agreement called the Sanitary and Phytosanitary Agreement which deals with how you move internationally those sorts of organisms around in such a way that you do not threaten the safety of the recipient countries.

Mr SECKER—Are you aware whether we are exporting micro-organisms much and whether it is worth much at the moment?

Mr Burton—I am not aware of any commercial exports of micro-organisms. There are scientific exchanges going on and I am aware of research that the CSIRO is doing. Dr Susan Blackburn in Hobart, for example, is doing some very interesting work with microalgae with a very significant potential commercial upside—the microalgae being feedstock for aquaculture. Given that 40 per cent of the cost of raising fish in those pens off South Australia is the cost of the food, if Australia were to develop microalgae, which is that food supply, it can drastically reduce feed cost and create a new industry.

CHAIR—You seem to be very pessimistic and very cautionary about the development of any regional industries. AFFA certainly was also very pessimistic about it. But isn't that an example of the potential for a regional industry to be developed? Also, as to Patrick's example of the sponges, there is an industry being developed up on Palm Island. Isn't there that potential? Why are you so pessimistic, hesitant and negative about the potential for development for regional industry based on bioprocessing?

Mr ADAMS—Because they are both city based people.

CHAIR—We need to move them out of Canberra, Dick.

Mr Kitchell—I have just moved from Tasmania to Canberra Mr Adams.

Mr NAIRN—They saw the light.

Mr ADAMS—It is a subregion of Australia. The tuna work, like the salmon work, needs the extension of a regional industry and that is why it is difficult for us to understand why you write so negatively.

Mr Burton—Perhaps if I could respond to Madam Chair's comments, and yours Mr Adams. I would be disappointed if you came away from this discussion, after reading our submission and seeing Environment Australia, as being pessimistic. Because this is an infant industry, the point I suppose that we were seeking to make is that it is very difficult to predict how it is going to develop.

Perhaps the point to take away is that old one: you have to expect the unexpected. Who would have thought, for example, that Palm Islanders would be growing sea sponges for hi-tech industry? It is not something that I would have thought of—that anybody would have thought of—five years ago. It may be that the sorts of discoveries that come are going to be ones that are very difficult to predict.

Mr SECKER—I have a problem with this whole thing. Do we actually need to try and predict how it is going to go? Shouldn't we just basically get out of the way and make it easy for these things to happen?

Mr Kitchell—That is pretty much the approach, as I was saying at the start, Mr Secker. Our role—and certainly our department's role—is not one of industry facilitation or development but providing the framework, which is a certain framework—certain both in terms of industry development and certain from our perspective in terms of protection of the resource. Once you have provided that then the way, from our perspective, is to let the market place take its course.

Mr SECKER—I like Mr Burton's answer which was yes.

CHAIR—Could I just take you to task slightly on this issue though—and I accept what you have said and that you are trying to make the regulations transparent and easy for industry to get moving. Scientists have been telling us now for quite a long period of time that we have got a natural advantage, that we have got that window of opportunity on the rest of the world because of the diversity of the species that we have here in this country, and with the fact that a community up in Palm Island is able to develop an industry which is a high income earning industry and there are probably a number of examples out there, why is it—I actually wrote down your words in your opening statement—that you 'do not want to raise expectations'? It is that is constant 'Don't get excited and carried away by it'. Why should we not get excited and carried away by it, because we have got this huge advantage over the rest of the world? Why are we not out there saying 'Hey, look what we have got?'

Mr Kitchell—Indeed, Madam Chair. I suppose it is the difference between a cautious public official and someone on your side of the table who is able to be a bit more excited about these things. I also did say that—

CHAIR—Well maybe you could be more excited by saying 'Hey we are developing all of these. We are developing a contract which is going to enable industry to benefit.' Just on that, why is it taking so long?

Mr Kitchell—To develop—

CHAIR—Yes. To develop these regulations. We have been talking about it for the past few years.

Mr Kitchell—The minister wanted to see the outcome of the Voumard inquiry. Voumard reported, and the minister sent that report and its recommendations around to his colleagues to get their views; the process of developing the regulations required us to talk extensively with the managers of the Commonwealth lands and waters who are in a number of departments, and the deliberative process by the minister has taken some time in consultation with his Biotechnology Australia ministerial colleagues. I cannot give you any other answer other than that.

Mr NAIRN—What is the time frame?

Mr Kitchell—Senator Hill has not actually given a precise time frame. He has indicated that once he has released the documents for public comment, that period for comment would be six weeks after he has released them for public comment and after he has received that public comment and the comment from his Biotechnology ministerial colleagues then he would be putting something to the Prime Minister.

Mr ADAMS—This international issue, the 40 countries working together on trying to get an international framework on exchanging information—did I read that in your submission?

Mr Burton—Mr Adams, I think—

Mr ADAMS—Or somewhere else.

Mr Burton—At the moment we understand that more than 40 countries—and I was told at the last conference of the parties on the Convention of Biological Diversity over 50 countries—are in the process of developing their own legal frameworks, as we are. So that is the first part of my response to that.

Secondly, there are negotiations under way in relation to the FAO international undertaking on plant genetic resources for food and agriculture, but that is separate from what we are doing, and that relates primarily to food crops, and those negotiations are continuing. So perhaps there may have been both of those things in your mind.

Mr ADAMS—Part of the negativism may be that you are coming from Environment Australia and one of your briefs is I guess to protect what it is out there in the biodiversity—would that be—

Mr Kitchell—We are very positive about that.

Mr ADAMS—Is that one of the cautions?

Mr Kitchell—I think it is what Geoff said before—that it is a start-up industry which has certainly got potential. Most of the high-tech component of it though has traditionally been placed in capital cities—in the Canberra, Sydney, Melbourne sort of triangle. It is quite possible, and probably inevitable, that if you do find some active constituent which requires you to collect more biological material as opposed to synthesising the chemical in a lab then inevitably that activity is going to be in regional Australia somewhere.

Mr ADAMS—But there are all these other spin-offs—the food issues for fish and whatever. There is also work going on in the world using microbacteria to chomp up oil spills and things like that—I do not know where that is going on—and using bugs in the future on wood pulp; these sorts of things.

CHAIR—Also reducing salinity.

Mr ADAMS—Picking up pesticides and so on are very positive environmental projects.

Mr Burton—The public good outcomes and the public good potentials of assaying our biodiversity are enormous. There is the potential to find genes that help with drought resistance, salinity resistance, resistance against endemic diseases that occur naturally or, even better, resistance against diseases that have come to these shores in the last couple of hundred years. If we had, for example, a gene or a bacteria that would act as an antidote to fight phytophthora cinnamomi then the jarrah forests in WA would not be in the strife that they are in, and so on.

I think that this has enormous potential. If there is a cautionary note about expectations, it stems in part from the fact that, if people believe that there is huge money up front, then in negotiating contracts they will expect to see that. That is unlikely to happen and therefore there is a risk of locking up the resource—in other words, shooting yourself in the foot. We want to have, in a very sensible and logical way, as much of our biodiversity properly examined so that

the community can benefit from what is there and at the same time value and protect that biodiversity.

Mr ADAMS—And get a good royalty from drug companies.

Mr Burton—If it is available, then we should get it.

CHAIR—Could I just ask you another question about this Virtual Herbarium? If someone is going to access this—let us say that they have a small biotech company that is trawling; this could be an avenue for development for the future—how do they determine who owns it if they are accessing information via the Virtual Herbarium. Is that going to be clearly stated?

Mr Kitchell—It will help, because it will show the land tenure on which the plant is located—whether it is on public land, national or park state forests or whether it is on private land. However, there will be a vast number of plants which are on both. You will have a map which will show you the distribution and within that area there will inevitably be both public and private land involved. The advantage that public agencies have when they come to have dealings with pharmaceutical companies or bioprospecting companies generally is that they can do one deal with one contract for a large area of the state as opposed to doing individual deals with individual farmers on individual properties. So inevitably those bioprospectors will be more likely to go to the public agencies than they will to the private landowners. But they will be able to, with some degree of certainty from the Virtual Herbarium, identify whether it is on public or privately owned land.

CHAIR—Does anyone have any other questions?

Mr LAWLER—I still have difficulty with this exclusivity question. In one example Geoff raised he talked about salinity. What if one person had an exclusive right to go in and research a salinity resistant strain of something that could grow in saline conditions and some other guy was keen to investigate the same thing that had the possibility of actually reversing salinity in the area? They are two completely competing interests—one with far greater long-term national interest than the other. I recognise that you say that the more exclusive it is, the more money you can expect to get. Because it is such an unknown—and it will be unknown for some time—I think we are treading on really dangerous ground having exclusivity on this sort of thing.

Mr Kitchell—That is a very broad issue you have raised, which goes to the ownership of genetic resource around the world. It goes to the whole issue, in a way, of plant variety rights and whether private companies have the moral right to own the genetic stock of some plant for a financial return when, if they were available to the world's community more generally, there might be a better public benefit.

CHAIR—Tony's question raises an issue that if there is an exclusive contract with a company, and you have another company coming along that wants to gain access to the same biota but for a variation on that exclusive contract, who arbitrates that, if you like, and is there a right of appeal?

Mr Kitchell—I suppose if there is a dispute about it, because you are talking about a commercial contract it would go to the courts to arbitrate, ultimately. It all depends on the

nature of the exclusivity. Is the exclusivity just for pharmaceutical products?—which in the case that I was talking about in Victoria it was. If there was a person who was wanting to investigate a land management issue like salinity, then the exclusivity that Amrad enjoyed would not apply. Theirs was purely for pharmaceutical products—in other words, for health products, things that might go to the production of drugs.

CHAIR—So with an issue like the one that Tony raised, more players would be allowed contracts and then it would be up to the individual players to develop the intellectual property first.

Mr Kitchell—That is right; indeed. Also, as I was saying before, so much of our plant life, so much of our biodiversity generally, actually occurs both on private and public land and the exclusivity that a state government can provide is only on that land which it owns. If you go to the bloke next door, the farmer next door, who also happens to have that plant, you can enter into a contract with him which would overcome any exclusivity that applies from publicly owned land.

Mr ADAMS—When we first started this inquiry the issue that came up was synthesising the information from an Australian product or specimen and then somebody getting the chemistry of that and emailing it to the other side of the world and producing the cure for cancer. We have not been able to overcome that problem in any way, have we? We haven't got any mechanisms to counter that.

Mr Burton—The mechanism that you have is the contract and its terms. If the contract has a clause in it which deals with how the benefit that derives from intellectual property created as a result of the analytical work that you have just described flows back to the original owners, that is the way you can capture it.

CHAIR—Are you making recommendations about percentage of benefit?

Mr Kitchell—No, I think that percentage of benefit has to reflect market forces. I think if government falls into the trap of saying that X per cent is a reasonable thing, then we would find ourselves in a very great bind.

Mr ADAMS—But how does the owner negotiate with a transnational company? This is where we get a 16-year-old kid negotiating contracts with employers. The difference between the parties here is an issue.

Mr Kitchell—It is a very significant issue, and one the Voumard inquiry spent some time considering. One of the ways you can approach that is by having a model contract. So instead of the owner of the resource sitting down and facing a multinational's standard No. 32 contract of 800 pages or whatever, there is a contract on the table that everybody recognises is fair and reasonable, where everybody understands its terms. Sometimes the nature of commercial contracts is that they are not easy to understand and, therefore, you have to engage a fair amount of legal expertise just to ensure that your own interests are protected. So by using a model contract where the terms are understood and which is agreed by all the parties as being a fair and reasonable basis on which you negotiate an outcome and which is sufficiently flexible that it can contain enough clauses to reflect the specific situation of the two parties—so if you like

they can pull chunks out of the model contract and put it into what they are negotiating as is appropriate—then you are addressing that disproportionate power in negotiation.

CHAIR—It is difficult, isn't it?

Mr Kitchell—It is hard. Some individual farmers might choose not to take a percentage of the profits at all because that is potentially so far into the future and so uncertain. Rather they would like to a bit of up-front certainty. They might settle for \$10,000 up-front rather than two per cent of the profits in the future.

Mr ADAMS—They will settle for both.

Mr Kitchell—You could settle for both, but in a commercial transaction you will negotiate one off against the other. The greater your long-term benefits, the less your up-front benefit and vice versa.

Mr ADAMS—We do not know what the up-front benefit is.

Mr Kitchell—There can be a range of up-front benefits. The benefit that we see as public agencies, as I said before, is just increasing your knowledge by having more people out there looking. The companies could pay you amounts per specimen. They could say, 'We will give you half a cent per specimen.' Or they can pay you and provide you with very little at the front, but with the prospect that, if they do strike paydirt, you will get a very large pay-off at the end of the day.

CHAIR—On this same issue, let us say, for example, that the owner of the resource is the marine park authority and the benefits in the model contract are spelled out—those benefits have to go back into the region where that authority is located rather than, for example, just into a level of government. Is that the sort of thing the model contract is also looking at?

Mr Kitchell—That is certainly a possibility we are contemplating—that you could return any profits from any benefit sharing arrangement back to the location where the biota is actually collected.

CHAIR—When you say that that is a possibility, is that on the table for the model contract?

Mr Kitchell—It is on the table, but just what our minister does with it is up to our minister. I cannot pre-empt what he might—

CHAIR—But you are putting out a draft for public comment. Is that the sort of thing that would be—

Mr Kitchell—The minister would put out the draft.

CHAIR—The minister.

Mr Kitchell—Yes. It is certainly something that came up through the Voumard inquiry; it is something that we have actively considered. Advice has been provided and the minister will make up his mind.

CHAIR—It certainly has been raised with us in this inquiry.

Dr WASHER—I wish to ask about the Virtual Herbarium. It sounds terrific. Does that just cover terrestrial, or aquatic plants?

Mr Kitchell—It covers everything that is in the herbaria around the country. It would be mostly terrestrial, but there would be aquatic plants in those herbaria as well.

Dr WASHER—Do we have any similar project for our fauna? We do not branch out into things like coals, sponges et cetera. We have not done that? There is nothing similar done on that?

Mr Kitchell—Not to my knowledge, no.

Dr WASHER—In regard to the cheapness and efficiency of things, if you go for patents, which were discussed a while ago, and you go to IP Australia, they want full cost recovery. Do you think that would be a major barrier in bioprospecting? Full cost recovery means, mainly, depreciation of buildings, costs of labour, et cetera—the whole shooting box.

Mr Kitchell—I can only really comment on Environment Australia. The only cost that we would impose would be some cost, if any, for the application for the permit, for the authority to take the material. From our perspective that will either be nothing or very little.

Dr WASHER—You should be paying because you are getting a promotion.

Mr Kitchell—We think there might be some small administrative cost that has to be met, but it is only going to be infinitesimal, so we would not think that would be an impediment.

Dr WASHER—In Antarctica Environment Australia really is the only major player. If I wanted to explore the edges of Antarctica in our area I would only have to apply to you to do that? Is it correct that there are no other agencies involved?

Mr Kitchell—That is correct. There are other countries involved, of course. Australia's claim to Antarctica is not uncontested.

Dr WASHER—I understand that. The other thing I wanted to ask is: are we looking to amalgamate the various governmental bodies—people with plant variety rights who are different from patent people, et cetera? Are we looking for consolidation? I know this is a little out of your field, but I guess you cover this under the environmental issues.

Mr Kitchell—There is nothing that we have heard in the wings that ministers or cabinets are deciding about departmental rearrangements along those lines. But I suppose all the biotechnology departments come together under the aegis of the biotechnology ministerial

council, which has our minister, the agricultural minister, the industry, science and resources minister and the health minister. All those areas which deal in the biotech field come together under that council. That is the mechanism under which there is this form of aggregation and coordination.

Dr WASHER—Who funds the Virtual Herbarium?

Mr Kitchell—It is going to be funded jointly by ourselves, the Commonwealth and each of the states and territories which will be participating. All of the states and territories have agreed to participate; they have all agreed on a funding formula. They have not all yet been able to prise out of their treasuries the amount of money that is necessary, but we are rather hopeful that when the ANZECC ministers get together later this month in Darwin they will actually commit then.

Dr WASHER—Is there much genetic work being done on DNA-type identification of the plants?

Mr Burton—Not a great deal by the herbaria themselves. Their main challenge at the moment is to actually ensure that they are able to map the biota, finding the species, making sure that they have details about where they got it, and whether it is still there in fact. Australia is large and the resources applied to it have been piecemeal over the years.

CHAIR—How often will it be updated?

Mr Burton—Continuously.

Dr WASHER—The question is whether the species are still in the same spot. Just to follow that question, one of the problems we have had is because of plant identification—a phenotypic identification. When we genetically check it out, sometimes we get nasty shocks. Various families are not even remotely related we assume; so looks do not tell everything.

Mr Kitchell—That is true.

Mr NAIRN—I notice in the Voumard report that the New South Wales government and the Northern Territory government did not make any submission. Either they did not see it as a priority or they were not sufficiently on track with their policy development. Has that accelerated at all since that? These are fairly major parts of Australia that did not have much to say.

Mr Burton—In respect of the Northern Territory, their interest in managing bioprospecting has increased. I understand that they are in negotiation with the Australian Institute of Marine Science, for example, on a contract not all that dissimilar from the sort of contract that AIMS has already negotiated with Queensland.

Mr NAIRN—What about New South Wales?

Mr Burton—New South Wales is a little bit more problematic. I understand that at officials level there is increased interest in the issue, but how that translates through the system we have yet to really find out.

CHAIR—Are there any other matters that you wanted to raise that you think we have not touched on at all?

Mr Kitchell—No.

CHAIR—We have got all the main points?

Mr Kitchell—I hope so. I thought you might detain me long enough to get out of the estimates committee hearing.

Resolved (on motion by **Mr Nairn**)

That, pursuant to the power conferred by section (a) of standing order 346, this committee authorises the publication of the evidence given before it at public hearing this day.

Committee adjourned at 12.20 p.m.