| ESTADO FINAL RESOLUCION DEL CONSEJO | FECHA | |
|---|---|---|
| **Observaciones:** _____ | | **1. APROBADO**<br>**2. PENDIENTE**<br>**3. RECHAZADO**<br>**4. A FISCALIA** |
| _____ | | |

This is only for internal use of FONDAP

# EVALUATION REPORT
# CENTERS FOR ADVANCED RESEARCH

## I. PROJECT INFORMATION

| |
|---|
| CENTER'S NAME<br>**Center for Advanced Studies in Ecology and Biodiversity** |
| DIRECTOR<br>**Fabian M. Jaksic** |

## II. EVALUATION PANEL

| NAME | ORGANIZATION/ INSTITUTION | E-MAIL | SIGNATURE |
|---|---|---|---|
| Michael F. Allen | Center for Conservation Biology/University of California, Riverside | Michael.allen@ucr.edu | |
| | | | |
| | | | |

## III. PROGRAMS EVALUATION (please fill up as many forms as programs exist within the Center)

| **PROGRAM'S NAME**<br>**1. Individual basis of biodiversity** |
|---|
| **PRINCIPAL INVESTIGATOR**<br>**Bozinovic** |

| ITEM | Total/ Good | Partial/ Regular | Insufficient/ Deficient | Internal use |
|---|---|---|---|---|
| **Degree of adoption of suggestions from the last report *** | | | | |
| **Accomplishment of objectives and goals of the reported program** | X | | | |
| **Quantity of the results reached regarding the objectives and goals** | X | | | |
| **Quality of reached outcomes related to proposal objectives and goals** | X | | | |
| **Degree of integration with other ongoing programs of the Center** | X | | | |
| **Diffusion of the results** | X | | | |

| **PROGRAM'S NAME**<br>**2. Biodiversity function** |
|---|
| **PRINCIPAL INVESTIGATOR**<br>**Lima** |

| ITEM | Total/ Good | Partial/ Regular | Insufficient/ Deficient | Internal use |
|---|---|---|---|---|
| **Degree of adoption of suggestions from the last report *** | | | | |
| **Accomplishment of objectives and goals of the reported program** | X | | | |
| **Quantity of reached outcomes related to proposal objectives and goals** | X | | | |
| **Quality of reached outcomes related to proposal objectives and goals** | X | | | |
| **Degree of integration with other ongoing programs of the Center** | X | | | |
| **Diffusion of the results** | X | | | |

If there had been none, please disregard this question

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**PROGRAM'S NAME**
**3. Integrating functions of biodiversity from genes to ecosystems**

**PRINCIPAL INVESTIGATOR**
**Armesto**

| ITEM | Total/ Good | Partial/ Regular | Insufficient/ Deficient | Internal use |
|---|---|---|---|---|
| **Degree of adoption of suggestions from the last report *** | | | | |
| **Accomplishment of objectives and goals of the reported program** | X | | | |
| **Quantity of reached outcomes related to proposal objectives and goals** | X | | | |
| **Quality of reached outcomes related to proposal objectives and goals** | X | | | |
| **Degree of integration with other ongoing programs of the Center** | X | | | |
| **Diffusion of the results** | X | | | |

***** If there had been none, please disregard this question

**PROGRAM'S NAME**
**4. Conservation and biocomplexity**

**PRINCIPAL INVESTIGATOR**
**Marquet**

| ITEM | Total/ Good | Partial/ Regular | Insufficient/ Deficient | Internal use |
|---|---|---|---|---|
| **Degree of adoption of suggestions from the last report *** | | | | |
| **Accomplishment of objectives and goals of the reported program** | X | | | |
| **Quantity of reached outcomes related to proposal objectives and goals** | X | | | |
| **Quality of reached outcomes related to proposal objectives and goals** | X | | | |
| **Degree of integration with other ongoing programs of the Center** | X | | | |
| **Diffusion of the results** | X | | | |

***** If there had been none, please disregard this question

| **PROGRAM'S NAME**<br>**6. Maintenance of diversity-coastal ecosystems** | | | | |
|---|---|---|---|---|
| **PRINCIPAL INVESTIGATOR**<br>**Navarrete** | | | | |
| **ITEM** | **Total/ Good** | **Partial/ Regular** | **Insufficient/ Deficient** | **Internal use** |
| **Degree of adoption of suggestions from the last report *** | | | | |
| **Accomplishment of objectives and goals of the reported program** | X | | | |
| **Quantity of reached outcomes related to proposal objectives and goals** | X | | | |
| **Quality of reached outcomes related to proposal objectives and goals** | X | | | |
| **Degree of integration with other ongoing programs of the Center** | X | | | |
| **Diffusion of the results** | X | | | |

***** If there had been none, please disregard this question

| **PROGRAM'S NAME**<br>**7. Changes in biodiversity: coastal marine and anthropogenic disruptions** | | | | |
|---|---|---|---|---|
| **PRINCIPAL INVESTIGATOR**<br>**Correa** | | | | |
| **ITEM** | **Total/ Good** | **Partial/ Regular** | **Insufficient/ Deficient** | **Internal use** |
| **Degree of adoption of suggestions from the last report *** | | | | |
| **Accomplishment of objectives and goals of the reported program** | X | | | |
| **Quantity of reached outcomes related to proposal objectives and goals** | X | | | |
| **Quality of reached outcomes related to proposal objectives and goals** | X | | | |
| **Degree of integration with other ongoing programs of the Center** | X | | | |
| **Diffusion of the results** | X | | | |

***** If there had been none, please disregard this question

| PROGRAM'S NAME |
|---|
| **8. unknown** |
| **Jaksic** |

## IV. CENTER EVALUATION

| ITEM | Total/ Good | Partial/ Regular | Insufficient/ Deficient | Uso Interno |
|---|---|---|---|---|
| **Degree of adoption of suggestions from the last report *** | X | | | |
| **Accomplishment of objectives and goals of the Center** | X | | | |
| **Quantity of reached outcomes related to proposal objectives and goals** | X | | | |
| **Quality of reached outcomes related to proposal objectives and goals** | X | | | |
| **Degree of integration between the programs of the Center** | X | | | |
| **Creation and reinforcement of international networks** | | X | | |
| **Outreach** | X | | | |
| **Diffusion of results** | X | | | |
| **Establishment and tasks of the Advisory Committee** | | | X | |

RECOMMENDATIONS **(see following concepts)**

| ☐ | ☐ | ☐ | ☐ | ☐ | ☐ |
|---|---|---|---|---|---|
| APPROVE | APPROVAL WITH SUGGESTIONS | ADDITIONAL INFO. | PENDING | REJECT | FONDECYT USE |

☐☐☐ Evaluation Date

_____ Signature reviewer

Recommendation: Approval with minor suggestions.
Evaluation date: 28 June 2009
Michael F. Allen

## EVALUATION CONCEPTS
## ANNUAL REPORT

1. **Approve:** The reviewer recommends to accept the report in its present form since he/she considers objectives and goals fully accomplished and all relevant issues covered by the report.

2. **Approval with suggestions or minor observations**

2.1 ***Minor observations*:** The reviewer recommends the approval of the report despite the justified incompleteness of some aspects that does not constitute an obstacle for the continuity of the Center activities.

2.2 ***Suggestions***: The reviewer recommends minor changes in order to improve the future performance of the Center.

3. A**dditional information:** The reviewer requires additional documentation or specific explanations to fully evaluate the report.

4. **Pending:** The reviewer makes significant observations to the report and conditions its approval to the accomplishment of specific demands.

5. **Reject:** The reviewer has strong objections to the contents of the report.

**EVALUATION COMMENTS:**

The Center for Advanced Studies in Ecology and Biodiversity has done a very impressive job of scientifically addressing a globally and locally critical topic, for which there are limited funding opportunities. They are to be commended for undertaking outstanding, internationally recognized research, which exceeds that demonstrated by many research centers in more recognized institutions in the USA and Europe. The publication output is exemplary and their student and postdoc training appears outstanding. In terms of both the quantity of publication output, and the high quality of journals in which all groups are publishing are equivalent to what we would expect in my own institution, the University of California, and in other top research institutions with whom I have worked.

The group set high expectations for themselves, and clearly met or exceeded those expectations in all cases. Importantly, each of the programs have publications in highly respected journals for their research topics. One critical issue that the Center undertook was to make the hard decision to drop an unproductive area, and build the productive ones. The leadership is to be commended; making these decisions is not easy. But clearly, the groups currently constituting the Center are highly productive.

A second area in which the Center excelled is in creating opportunities and expectations for synergies between the groups. There are a number of important publications spanning two or more programs. Again, the leadership of the Center is to be commended.

There are a few issues that, with some different directions, might improve the attainment of the research objectives.

One is International Advisory Board. The report clearly defines concerns from the Center leadership with this board, so this is no surprise. This has not worked as well as hoped. One problem is that every scientist I know is overcommitted- this shows in the difficulties in organizing an Advisory meeting as expressed in the report. An alternative approach might be to look for more collaborations with junior, or less-well recognized, but emerging senior scientists with fewer commitments. That is, the next generation of leaders, not the current generation. In the US, these would be individuals at the Associate Professor, or early Full Professor level. They are often more willing to undertake travel and new projects. How to find these individuals? By examining the literature and international meetings; I am guessing that each PI knows some potential collaborators at this level. The MEDECOS 2010 meetings, scheduled for fall 2010 would be a good meeting to coordinate an Advisory board meeting. This would have the advantage of putting the Center in a position of leading at an international scale.

A second concern is that the different program areas are sometimes not really that different, but have more to do with taxonomic/historical separation than real study area differentiation. For example, programs 1 and 2 are relatively similarly focused. The differentiation appears to be rather artificial. I had a difficult time differentiating conceptually programs 3 and 4. If these programs are to remain differentiated, clearer boundaries and well-defined research overlap activities should be enunciated.

The third concern I have, again expressed by the Center leadership, is the lack of adequate funding, especially for equipment. I do not know how the Center can be a leader in the field of program number 3 (…genes to ecosystems.") without top quality equipment in genomics/sequencing facilities, computer/GIS/ecoinformatics facilities and expertise, isotope measurement instrumentation or sensor technologies. One or more of these

equipment facilities are crucial for the Center to move beyond the individual taxon/natural history focus into the broader research topics outlined, and explored so elegantly thus far. I would agree with their internal assessment that more efforts to obtain state-of-the-art facilities are needed for the Center to become an international leader.

One approach might be to enhance the programs in biocomplexity, building upon the organismal-scale expertise in the Center researchers, and building up off-the-shelf sensor technologies coupled with interactive computer simulation models. Biocomplexity studies are computer intensive, but more based on multiple runs of multiple simple models rather than single, highly complex models. A focus is on initial conditions and unexpected intrusions of unpredicted events or entities. This would build upon the natural history expertise demonstrated across the Center.

A second approach that we are using, is to build our environmental studies around sensors that collect frequent data of simple parameters, such as images of animals, plants and fungi, temperature and moisture conditions, etc. These technologies are not expensive to purchase or maintain, especially as computer costs continue to decline. They are revealing interesting differences from expectations at the organismal to ecosystem scale that can feed directly into biocomplexity type modeling approaches.

Hopefully, together these might provide ideas as to how to look to future scaling up research without the large equipment outlays, at least until economic times improve.

In summary, the productivity of this Center is impressive by all measures. However, there are constraints noted by the leadership, especially in the areas of major equipment purchases and availability. Some strategic thinking about how to deal with increasing financial difficulties but still building upon the extraordinary strengths would help meet the objectives for the remaining 3 years of the 5 year program, and extend the life well into the future.

| ESTADO FINAL RESOLUCION DEL CONSEJO | FECHA | |
|---|---|---|
| **Observaciones:** _____ | | **1. APROBADO**<br>**2. PENDIENTE**<br>**3. RECHAZADO**<br>**4. A FISCALIA** |
| _____ | | |

This is only for internal use of FONDAP

## EVALUATION REPORT
## CENTERS FOR ADVANCED RESEARCH

## I. PROJECT INFORMATION

| |
|---|
| CENTER'S NAME: **CASEB** |
| DIRECTOR: **FABIAN JAKSIC** |

## II. EVALUATION PANEL

| NAME | ORGANIZATION/ INSTITUTION | E-MAIL | SIGNATURE |
|---|---|---|---|
| **MICHAEL R. WILLIG** | **UNIVERSITY OF CONNECTICUT** | **MICHAEL.WILLIG@UCONN.EDU** | |
| | | | |
| | | | |

## III. PROGRAMS EVALUATION (please fill up as many forms as programs exist within the Center)

**PROGRAM'S NAME: INDIVIDUAL BASIS OF BIODIVERSITY**

**PRINCIPAL INVESTIGATOR: FRANCISCO BOZINOVIC (PROGRAM 1)**

| ITEM | Total/ Good | Partial/ Regular | Insufficient/ Deficient | Internal use |
|---|---|---|---|---|
| **Degree of adoption of suggestions from the last report *** | XXXX | | | |
| **Accomplishment of objectives and goals of the reported program** | XXXX | | | |
| **Quantity of the results reached regarding the objectives and goals** | XXXX | | | |
| **Quality of reached outcomes related to proposal objectives and goals** | XXXX | | | |
| **Degree of integration with other ongoing programs of the Center** | XXXX | | | |
| **Diffusion of the results** | XXXX | | | |

**PROGRAM'S NAME: BIODIVERSITY FUNCTIONING**

**PRINCIPAL INVESTIGATOR: MAURICIO LIMA (PROGRAM 2)**

| ITEM | Total/ Good | Partial/ Regular | Insufficient/ Deficient | Internal use |
|---|---|---|---|---|
| **Degree of adoption of suggestions from the last report *** | XXXX | | | |
| **Accomplishment of objectives and goals of the reported program** | XXXX | | | |
| **Quantity of reached outcomes related to proposal objectives and goals** | XXXX | | | |
| **Quality of reached outcomes related to proposal objectives and goals** | XXXX | | | |
| **Degree of integration with other ongoing programs of the Center** | XXXX | | | |
| **Diffusion of the results** | XXXX | | | |

***** If there had been none, please disregard this question

| **PROGRAM'S NAME: INTEGRATING THE FUNCTIONS OF BIODIVERSITY** |
|---|
| **PRINCIPAL INVESTIGATOR: JUAN ARMESTO (PROGRAM 3)** |

| ITEM | Total/ Good | Partial/ Regular | Insufficient/ Deficient | Internal use |
|---|---|---|---|---|
| **Degree of adoption of suggestions from the last report *** | XXXX | | | |
| **Accomplishment of objectives and goals of the reported program** | XXXX | | | |
| **Quantity of the results reached regarding the objectives and goals** | XXXX | XXXX | | |
| **Quality of reached outcomes related to proposal objectives and goals** | XXXX | | | |
| **Degree of integration with other ongoing programs of the Center** | XXXX | | | |
| **Diffusion of the results** | XXXX | XXXX | | |

| **PROGRAM'S NAME: CONSERVATION AND BIOCOMPLEXITY** |
|---|
| **PRINCIPAL INVESTIGATOR: PABLO MARQUET (PROGRAM 4)** |

| ITEM | Total/ Good | Partial/ Regular | Insufficient/ Deficient | Internal use |
|---|---|---|---|---|
| **Degree of adoption of suggestions from the last report *** | XXXX | | | |
| **Accomplishment of objectives and goals of the reported program** | XXXX | | | |
| **Quantity of reached outcomes related to proposal objectives and goals** | XXXX | XXXX | | |
| **Quality of reached outcomes related to proposal objectives and goals** | XXXX | | | |
| **Degree of integration with other ongoing programs of the Center** | XXXX | | | |
| **Diffusion of the results** | XXXX | | | |

- If there had been none, please disregard this question

| PROGRAM'S NAME: MAINTENANCE OF DIVERSITY |
|---|
| PRINCIPAL INVESTIGATOR: SERGIO NAVARRETE (PROGRAM 6) |

| ITEM | Total/ Good | Partial/ Regular | Insufficient/ Deficient | Internal use |
|---|---|---|---|---|
| **Degree of adoption of suggestions from the last report *** | XXXX | XXXX | | |
| **Accomplishment of objectives and goals of the reported program** | XXXX | | | |
| **Quantity of the results reached regarding the objectives and goals** | XXXX | XXXX | | |
| **Quality of reached outcomes related to proposal objectives and goals** | XXXX | | | |
| **Degree of integration with other ongoing programs of the Center** | | XXXX | | |
| **Diffusion of the results** | XXXX | | | |

| PROGRAM'S NAME: CHANGES IN BIODIVERSITY |
|---|
| PRINCIPAL INVESTIGATOR: JUAN CORREA (PROGRAM 7) |

| ITEM | Total/ Good | Partial/ Regular | Insufficient/ Deficient | Internal use |
|---|---|---|---|---|
| **Degree of adoption of suggestions from the last report *** | XXXX | | | |
| **Accomplishment of objectives and goals of the reported program** | XXXX | XXXX | | |
| **Quantity of reached outcomes related to proposal objectives and goals** | | XXXX | | |
| **Quality of reached outcomes related to proposal objectives and goals** | XXXX | XXXX | | |
| **Degree of integration with other ongoing programs of the Center** | | XXXX | | |
| **Diffusion of the results** | | XXXX | | |

***** If there had been none, please disregard this question

## IV. CENTER EVALUATION

| ITEM | Total/ Good | Partial/ Regular | Insufficient/ Deficient | Uso Interno |
|---|---|---|---|---|
| **Degree of adoption of suggestions from the last report *** | XXXX | | | |
| **Accomplishment of objectives and goals of the Center** | XXXX | | | |
| **Quantity of reached outcomes related to proposal objectives and goals** | XXXX | | | |
| **Quality of reached outcomes related to proposal objectives and goals** | XXXX | | | |
| **Degree of integration between the programs of the Center** | XXXX | | | |
| **Creation and reinforcement of international networks** | XXXX | XXXX | | |
| **Outreach** | XXXX | | | |
| **Diffusion of results** | XXXX | | | |
| **Establishment and tasks of the Advisory Committee** | | XXXX | | |

RECOMMENDATIONS **(see following concepts)**

| | | | | | |
|---|---|---|---|---|---|
| | | | | | |

**APPROVE**

**15 JUNE 2009** Evaluation Date **MICHAEL R. WILLIG** Signature reviewer

## EVALUATION CONCEPTS
## ANNUAL REPORT

2. **Approve:** The reviewer recommends to accept the report in its present form since he/she considers objectives and goals fully accomplished and all relevant issues covered by the report.

2. **Approval with suggestions or minor observations**

2.1 ***Minor observations*:** The reviewer recommends the approval of the report despite the justified incompleteness of some aspects that does not constitute an obstacle for the continuity of the Center activities.

2.2 ***Suggestions***: The reviewer recommends minor changes in order to improve the future performance of the Center.

3. A**dditional information:** The reviewer requires additional documentation or specific explanations to fully evaluate the report.

4. **Pending:** The reviewer makes significant observations to the report and conditions its approval to the accomplishment of specific demands.

5. **Reject:** The reviewer has strong objections to the contents of the report.

## EVALUATION COMMENTS:

### General Assessment

The vision, mission, and goals of CASEB address some of the most pressing 21st Century issues to face society across the globe and in Chile. Taken together, the research, education, and outreach activities of the center clearly advance environmental understanding in a substantive fashion and inform management and sustainable use of natural resources. These efforts have created a Center of international repute that is the envy of many universities in both developed and developing regions of the world. Indeed, the accomplishments of CASEB have strategically enhanced Chile's reputation in environmental and biodiversity sciences to the point where it is clearly the premier center of its type in all of Latin America.

The ultimate metrics of success for a scientific center such as CASEB include: (1) the quantity and quality of scholarship, including its multidisciplinary nature; (2) the extent to which human infrastructure is developed at the post-doctoral and doctoral levels, including the transformation of the culture of scientific collaboration; (3) the degree to which FONDAP resources are leveraged to secure other financial support for Center activities; and (4) the extent to which scientific understanding informs management, policy, or public understanding. In all four areas, the overall accomplishments of CASEB are outstanding and signal the existence of a dynamic center in which secured FONDAP resources have been used to excellent effect, including the leveraging of substantial additional federal, international, and private funding.

Importantly, the successes of the Center have surpassed its projected goals for the first two years of operation associated with the second grant from FONDAP. Five illustrative examples are noteworthy of these achievements (i.e., those during years 6 & 7).

- CASEB projected 100 ISI publications and produced 194 of them (i.e., ~2 times more than expected);
- CASEB expected 16 publications/collaborations with other institutions or centers and realized 178 of them (i.e., > 10 times more than expected);
- expected 6 post-docs to be enrolled in the program and supported 29 of them (i.e., ~5 times more than expected);
- CASEB expected 2 projects with private or public institutions and realized 71 of them (i.e., ~35 times more than expected); and
- CASEB expected to organize 6 scientific meetings and actually organized 23 of them (i.e., 4 times more than expected).

These accomplishments suggest effective leadership as well as productive collaboration by senior personnel at the Center. In short, the Center has played a vital role in the discovery of new knowledge, in the training of the next generation of scientists, and in engaging the public as well as the private-sector and government-sector, about the importance of biodiversity, ecosystem services, and environmental sustainability.

### Response to Previous Reviews

From an administrative perspective, I am sure that the decision to terminate Program 5 (Marine Populations) was difficult for a variety of reasons. The reorganization reflects a concrete and cost-effective response to previous reviews about the modest productivity of Program 5. Indeed, the tactical decision to replace Program 5 with Program 8 suggests that CASEB's

leadership is willing to make difficult decisions about the prioritization of effort and allocation of resources so that Center can remain a vibrant and dynamic organization.

Continued efforts to enhance collaboration among programs, and catalyze a culture of transdisciplinarity in research and education are significant accomplishments of CASEB during its 7th year of operation. The number of ISI publications that have been produced, the number of graduate students and post-doctoral fellows that have been mentored, and the extent of involvement in national or international scientific meetings are strong indicators of success. Importantly, a substantial number of these activities have been the consequence of collaboration between or among programs. Programs 1, 2, 3, & 4 have been particularly interactive with each other in this regard, with between 33% and 61% of published journal articles arising from cross-program interactions. This is less true of programs 6 & 7, with between 10% and 15% of published journal articles arising from cross-program interaction. Moreover, most programs have collaborated significantly in the mentoring of PhD students, with between 33% and 50% of students co-advised by faculty members from 2 or more programs (the extent of cross-program involvement by Program 1 in this regard is less, at ~10%). In addition, a substantive number of publications have appeared in premier disciplinary journals (i.e., those with ISI > 3.00), including *Science, The American Naturalist, Global Ecology & Biogeography, Ecology, Environmental Toxicology & Chemistry, Oikos, Ecology Letters, Oecologia, Journal of Biogeography, Ecological Monographs, Ecological Applications, Frontiers in Ecology & the Environment, Journal of Ecology, Molecular Ecology, Journal of Animal Ecology, Molecular Phylogenetics & Evolution, Global Change Biology, FEMS Microbiological Review,* and *Evolution*. Thus, the Center's productivity in terms of publication number, nature and impact is laudatory, representing the *sine qua non* of scientific accomplishment.

**Concluding Remarks & Points for Consideration**

The overall assessment of CASEB is that the Center continues to be ***outstanding***, even exceeding quantitative projections or goals for productivity. My evaluation of the six long-standing programs represents an attempt to distinguish among them based on qualitative and quantitative metrics, so as to assess the extent to which they individually contribute to the overall stellar accomplishments of the Center. Assessment of Program 8, the newly constituted entity during year 7, remains a task for the future. Inter-program comparisons are a difficult, as the distribution of resources and staffing is not the same for all programs. Consequently, that return on investment is hard to ascertain with confidence. In terms of research productivity, Programs 1 & 2 are outstanding, Programs 3, 4 & 6 are excellent, and Program 7 is very good. In terms of education and mentoring, all programs are outstanding, with significant involvement in graduate education and appropriate emphases on transdisciplinary advisement. Differential involvement of the extant programs in outreach is difficult to quantify and assess, but the overall impact of the Center appears to be substantial.

Hereafter, I offer a number of suggestions for consideration by the Center as it evaluates what it has accomplished, and what it wishes to accomplish during the remainder of the granting period. These should ***not*** be construed as weaknesses, but rather as potential opportunities to guide mid-course activities during the next three years. Should additional resources become available from FONDAP, these opportunities would be ripe for development. By all reasonable criteria, investment in CASEB by FONDAP is cost-effective and transformative with regard to integrated research and education that focuses on biodiversity and the environment.

Continued emphasis on the cross-cutting programs – a great success by CASEB -- will help to change the culture of collaboration and education in Chile, and will produce scientific understanding in critical areas at the frontiers of disciplines. Leadership of the Center should

consider ways to enhance the social science dimensions of research and education in all extant Programs, as this is an integral component of environmental sustainability. I would give high priority to the allocation of new positions to this area should FONDAP provide additional resources or supplements in the future.

Strategic involvement of the International Advisory Board remains an area for which improvement should be expected in the coming years. This could be particularly important in guiding international collaborations, which are currently extensive, and in further enhancing the reputation of the Center beyond Chile. These connections could also be exploited to help in the recruitment of post-doctoral fellows working on socioecological questions that could be aligned with any of the extant research programs.

To the extent possible, it would be useful to identify strategic metrics so that an evaluation of the efficacy of various "outreach activities" could be quantified, with a long-term goal of informing investment of resources by the Center and for rewarding programs with appreciable activities in those areas.

To the Center's credit, a number of scholarly publications in the areas of policy and ethics appear in year 7. Continued enhancement of socioecological research and education is critical for CASEB to be able to provide guidance for sustainable development in Chile and the world.

Greater involvement of graduate students and post-doctoral fellows in the enterprise of publication should be a goal for the next three years of support. In year 7, 15 post-doctoral fellows were involved in the publication of 17 journal articles (~1.1 publications per post-doctoral fellow). Similarly, 44 doctoral students were involved in the publication of 22 journal articles (0.5 publications per student) in year 7. As the various programs mature, I hope that each of the next three years would evince modest per capita increases, especially for the post-doctoral fellows.