5. BIODIVERSITY AND CONSERVATION

The seaweeds exhibit an astonishing variety of aesthetic and diverse life forms throughout the shallow seas of the world. While it is estimated that there are c. 10,000 species of red, brown and green seaweed, a great deal more knowledge is needed on how much diversity exists and where species are distributed. There has been very little effort or progress regarding the conservation of algae and conservation initiatives remain patchy. This is compounded by the lack of seaweed taxonomists. Impacts, including coastal degradation, habitat loss, pollution, aquaculture, arrival of non-native species along with their own potentially pathogenic viruses and bacteria, all take their toll on local seaweed floras. One of the main problems in seaweed farming nowadays is related to invasive seaweeds. The lack of protocols and codes of conduct in relation to the introduction of commercially interesting species can result in huge environmental impact. Whilst bioinvasions can be the consequence of aquaculture activities, involuntary introductions, such as from ballast water or ships’ hulls, are also potential sources. 2010 is the year of biodiversity and seaweed invasion can be considered a serious treat of biodiversity if exotic species become established in indigenous communities. Academics and NGOs need to work with coastal communities to create guidelines to manage practices for invasive species, and also create sustainable livelihoods for these people. Seaweed farming could be considered as a tool for coastal resource management, and also to protect biodiversity especially if it can attract hatcheries for several marine organisms.

Needs identified

- Need for protocols to avoid negative impacts of aquaculture, e.g., moving seaweeds around (quarantine protocol above). Problems of introductions go beyond the seaweed itself; introduced viruses, bacteria etc, can destroy crops and have to be taken into account with the introduction of seaweeds.
- Potential for a global project to assess levels of spread of non-native species.
- Potential to investigate what has been introduced with oysters.
- Political sensitivity of bad publicity for lucrative industries such as oyster farming.
- Need to assess the environmental impact of seaweed farming (including impacts of introducing commercial species or accidental introductions).
- Need for method development and transfer of methods for e.g., identifying Hot Spots and Important Plant Areas for seaweeds.
- Need for verifiable (specimen-based) data for mapping (geo-referencing).
- Need for data on a global scale to be able to make biodiversity and conservation assessments for policy etc.
- Need to compile more information on biodiversity in time and space.
- To use seaweed farming as a tool for coastal resource management.
Strengths and Weaknesses

Strengths
- Have genetic tools for determining non-native species.
- Have initiatives (Australia, California, UK) on which to build.

Weaknesses
- Risk of loss of species before they are documented.
- Not enough safeguards/protocols in place to prevent transfer of species.
- Lack of seaweed taxonomists.
- Lack of data on a large/global scale for which assessments can be made.

PROJECTS

Short term
1. Compilation of seaweed conservation methods.
Action: Juliet Brodie.

Medium term
1. Development of seaweed count projects with local dive clubs and high schools.
Action: To be determined.
2. Develop guidelines on suggested management practices for invasive species.
Action: Erick Ask, Leila Hayashi.

Long term
1. Quantitative global inventory of seaweed species richness.
Have a workshop to develop a protocol.
Action: Chris Maggs, Line Le Gall, Juliet Brodie.
2. How to manage invasive Kappaphycus/Eucheuma
Action: Erick Ask and Leila Hayashi.