

國立嘉義大學九十四學年度

水產生物學系碩士班招生考試試題

科目：專業英文

英翻中 (每題 25%)

- Biofilter Performance and Prevention of Ammonia Accumulation**

Numerous recirculating systems have been constructed with inadequate biofilter performance, which has resulted in higher than desired nitrite-nitrogen and / or total ammonia nitrogen (TAN) concentrations. Several problems can cause a biofiltration failure, including:

 - Insufficient biofilter surface area or volume;
 - Inadequate dissolved oxygen available within the biofilter;
 - Excess solids or biochemical oxygen demand (BOD) loading on the biofilter;
 - Inadequate water exchange through the biofilter;
 - Inadequate TAN removal efficiency across the biofilter.

According to Timmons et al. (2002), the most important factors in the design of a biofilter are the mass of total ammonia nitrogen (TAN) that it removes per day, the water flow that it treats and the percentage of TAN that it removes during each pass.
- Are Invasive Species a Major Cause of Extinctions?**

The link between species invasions and the extinction of natives is widely accepted by scientists as well as conservationists, but available data supporting invasion as a cause of extinctions are, in many cases, anecdotal, speculative and based upon limited observation. We pose the question, are aliens generally responsible for widespread extinctions? Our goal is to prompt a more critical synthesis and evaluation of the available data, and to suggest ways to take a more scientific, evidence based approach to understanding the impact of invasive species on extinctions. Greater clarity in our understanding of these patterns will help us to focus on the most effective ways to reduce or mitigate extinction threats from invasive species.
- Italian demand for organic products is rapidly increasing, yet there is currently no supply of certified organic marine-fish. Moreover, over recent years marine fish farm profitability has been reduced because of competition from imported products. A pilot project was carried out in order to:**
 - define standards for organic marine fish farming;
 - evaluate production costs in four farms, experimenting semi-extensive organic fish farming under proposed standards (seabream, *Sparus aurata* and seabass, *Dicentrarchus labrax*);
 - estimate the potential demand for certified organic marine fish and consumer willingness to pay in order to figure out the profitability of a product differentiation strategy. This paper shows the economic results for production costs at the farm level and potential demand. The latter has been estimated using survey-data of 6,877 consumers by means of a questionnaire-interview carried out during an experimental organic marine fish promotion sale. Results show that organic marine fish farming could be a good market opportunity for some Italian fish farmers by improving consumer information on organic products, adopting a supply concentration strategy at the farm level and carefully managing semi-extensive-farming set up by proposed regulations.
- The incidence of antibiotic resistance was compared in bacteria isolated from pond water, pond sediment, water and sediment from the receiving environment area where water from pond drains, which is 0 and 50 m away from the exit gate, cultured shrimp from ponds that have not used any antimicrobials, ponds that have previously used antimicrobials and ponds that are currently using oxolinic acid. Most of the bacteria isolated from all sample and pond type were *Vibrios*. Among the *Vibrios*, *V. harveyi* were most commonly isolated. Multiple antibiotic resistance MAR to at least two antimicrobials was highest in ponds currently using oxolinic acid 24% of bacteria isolated from such ponds, followed by those that have previously used antimicrobials 19% and the least was those from ponds that have not used any antimicrobials 17%. The lowest incidence of antibiotic resistance was observed in ponds that have not used any antimicrobials 41% of the isolates from such ponds. Among the individual antibiotics, incidence of resistance to oxytetracycline was highest 4.3% of the total number of isolates followed by furazolidone 1.6%, oxolinic acid 1% and chloramphenicol 0.66%. Resistance to individual chemotherapeutants did not reflect the pattern of antimicrobial use with ponds that have previously used antimicrobials showing the highest incidence of resistance to one antimicrobial 12% of total isolates from such ponds. Resistance to both oxolinic acid and furazolidone 15% of total number of isolates was highest compared to other antimicrobial resistance profiles 1–12%. Multiple antimicrobial resistance and intermediate reaction to at least one antimicrobial are associated with antimicrobial use.**