



ORASECOM's Joint Basin Survey-1

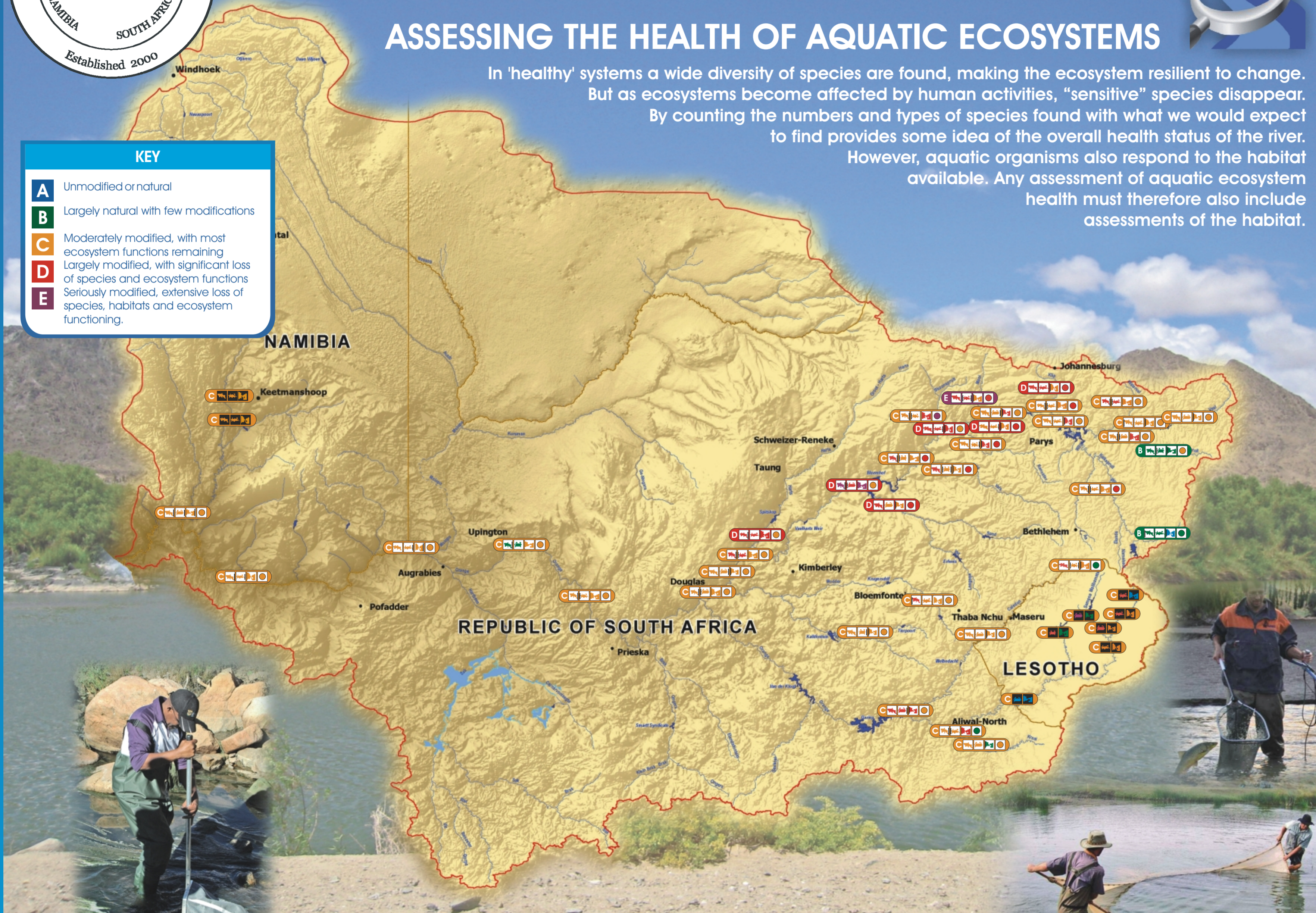
2010

ASSESSING THE HEALTH OF AQUATIC ECOSYSTEMS

In 'healthy' systems a wide diversity of species are found, making the ecosystem resilient to change. But as ecosystems become affected by human activities, "sensitive" species disappear. By counting the numbers and types of species found with what we would expect to find provides some idea of the overall health status of the river. However, aquatic organisms also respond to the habitat available. Any assessment of aquatic ecosystem health must therefore also include assessments of the habitat.

KEY

- A** Unmodified or natural
- B** Largely natural with few modifications
- C** Moderately modified, with most ecosystem functions remaining
- D** Largely modified, with significant loss of species and ecosystem functions
- E** Seriously modified, extensive loss of species, habitats and ecosystem functioning.



ASSESSING AQUATIC ECOSYSTEM HEALTH

- The first Joint Basin Survey included monitoring of:
- Macro-invertebrates.** These are small animals - mostly insects found in large numbers in flowing water.
 - Fish.** Assessing the numbers and types of fish found to those that you would expect to find under natural conditions.
 - Diatoms.** Are algae found on rocks in the river and which are sensitive to pollution and provide good indicators of the impact of human activities.
 - Habitat and geomorphology.** This is an assessment of the types and quality of habitat available.
 - Overall ecological health.** This is an assessment of the overall health of the river ecosystem at that point.

Macro-invertebrate Assessments



Macro-invertebrates are small insects, crustaceans, snails and worms - usually found in large numbers in flowing water. Macro-invertebrates are sampled by sweeping a net through different habitats in the river. By counting the number of different groups we find, and scoring these against "sensitivity scores", we can get an indication of impacts on the site. In this survey slightly different methods were used in the Lesotho Highlands and in Namibia, and so the results from these areas are shown differently.

Fish Assessments

Fish are sampled through an electroshocking system. An electrical current is passed through the water using hand-held probes. This stuns the fish, and they can be collected. The probes are swept through the different habitats in the river, and the number and types of fish found are recorded. The numbers and types of fish identified through this method can be compared to what we expect to find at any site and habitat type. Because the time spent in electroshocking is also carefully recorded, the "catch per unit effort" can also be determined.

Habitat Assessment (Geomorphology)

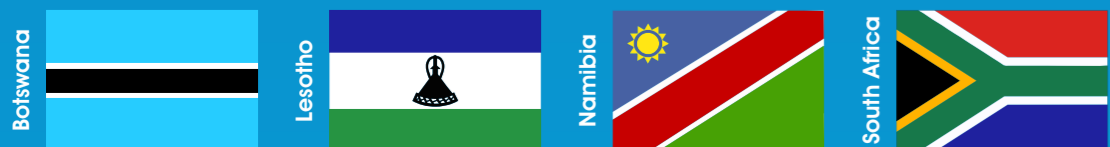
Habitat is assessed by determining the kinds and quality of the habitats (rapids, reeds, stones, overhanging trees, etc.) available at the site, as well as by taking upstream conditions into account.

Diatoms

Diatoms are sampled by scraping the "slime" off of rocks found in the river. The types of diatoms found on these rocks can provide a wealth of information on the possible impacts of pollution on the system.

The overall ecosystem health assessment

The overall health of the system is determined by taking all of the above factors into account. In this way river ecologists can determine the overall health status at that point in the river.



SURVEY UNDERTAKEN WITH SUPPORT FROM:

