

**CONTRASTING THE SPREAD, POPULATION DYNAMICS,
AND ECOSYSTEM IMPACTS OF *DREISSENA POLYMORPHA*
AND *DREISSENA ROSTRIFORMIS BUGENSIS*
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**СРАВНЕНИЕ РАСПРОСТРАНЕНИЯ, ДИНАМИКИ ПОПУЛЯЦИИ
И ВОЗДЕЙСТВИЯ НА ЭКОСИСТЕМЫ *DREISSENA POLYMORPHA*
И *DREISSENA ROSTRIFORMIS BUGENSIS*
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Dreissena polymorpha (Pallas) and *Dreissena rostriformis bugensis* (Andrusov) continue to spread, both in Europe and in North America, at virtually all spatial scales, altering aquatic communities and habitats they invade. Both species have similar life history characteristics, but differ in the timing and rates of spread, habitat requirements, growth, and population dynamics. While *D. polymorpha* is among the best studied freshwater invertebrates, we do not always have comparable information for *D. r. bugensis*, which limits our ability to predict the spread and ecological impacts of this important freshwater invader. We found that *D. polymorpha* spread faster than *D. r. bugensis* at almost all spatial scales throughout their invasion history. We also found that the time lag between when a species was first detected in a waterbody and it reached its maximum population density was much shorter for the *D. polymorpha* (2–4 years) than for *D. r. bugensis* (6–19 years). This shorter lag time for *D. polymorpha* population growth may be the key to their invasion success and faster rate of spread than the *D. r. bugensis*.

Although in many waterbodies *D. r. bugensis* has been reported to outcompete *D. polymorpha*, local competition may be much more dependent upon local environmental conditions and will determine which dreissenid species is to become dominant in a given waterbody. *D. r. bugensis* has an advantage in waterbodies with a large profundal zone, prone to mid-summer hypoxia, or where the bottom is covered with soft substrates. In shallow lakes and rivers, however, *D. polymorpha* is likely to retain an advantage.

Although we have a great deal of information about the ecosystem impacts of the *D. polymorpha*, fewer data exist for impacts of the *D. r. bugensis*. In addition, because most of the waterbodies invaded by *D. r. bugensis* were first invaded by *D. polymorpha*, it is difficult to separate the impacts of these two species and determine the role of *D. r. bugensis* alone. By clearing large volumes of water, both dreissenid species transfer materials from the water column to the benthos, providing a strong direct link between planktonic and benthic components of the ecosystem (benthic-pelagic coupling), and induce major changes in the ecosystems they invade. Because *D. r. bugensis* are found throughout the whole waterbody, rather than concentrated in shallow areas or areas with hard substrates as for the *D. polymorpha*, they are likely to have larger total population sizes than *D. polymorpha*. Larger population sizes will filter larger volumes of water, therefore, *D. r. bugensis* may have a greater system wide effect than *D. polymorpha*, especially in deep lakes and reservoirs with large profundal zones.